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ABSTRACT

This paper reviews the literature on the effects of preschool attendance on academic success in elementary school and reports on a study designed to investigate the effect of preschool education on the academic achievement of at-risk, minority-group kindergarten children. The Test of Basic Experiences (TOBE) was administered at the beginning of the school year to 30 kindergartners who had attended preschool and a control group of 30 who had not. A comparison of the test results found a statistically significant difference between the achievement of the children who had attended preschool and the children who had not. (Contains 10 references.) (MDM)

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# THE EFFECT OF PRESCHOOL EDUCATION ON ACADEMIC ACHIEVEMENT OF AT RISK CHILDREN

Brenda Anderson

There has been much concern for the many kindergarten students arriving to school, with limited, or no preschool experience and without basic academic skills, such as, recognition of shapes, colors, able to listen to a brief story, to tell a story, draw a recognizable human figure, and to give their first/last names.

The purpose of this study is to investigate the effect of preschool education on the academic achievement for those students who have attended preschool; whether there are significant and long lasting gains in academic achievement; and if parental involvement in schools play a prominent role in academic success of preschool children?

As concerns for achievement test scores in later grades escalate, kindergartens are becoming more teacher directed and knowledge focused. Many educators are concerned that public school based prekindergarten programs will follow the same path. In the 1960's a new theory evolved in education for preschool and kindergarten programs. The theory that emerged was that the earlier the introduction to academics the better these students would achieve in later schooling. As a result, Head Start emerged.

This project was initiated for poverty strickened children, with purposes of improving upon their intellectual skills, nurture socio-emotional development and to meet health and nutritional needs. Major emphasis were placed on parent an community involvement.

The State Board of Education (1985) adopted a policy statement on early childhood education. Legislation enacted in 1985, authorized the State Board of Education to administer a new grant program which enable school districts to operate prekindergarten programs for children aged 3 to 5 years old. The statute (Sec. 2-3.71, of the School Code) identified the eligible population to be served in the program as children at risk of academic failure due to poverty, broken homes, disability, or other environmental deprivation, and subject to language, cultural, economic like disadvantages, in need of additional, reinforcing academic stimulation and instruction just to keep up with sufficiently engaged students.

Preschool is defined as any group program for children under the

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age of five, with an explicit purpose of providing children with the knowledge and social competence thought to be necessary for normal development or success in public schools as determined by data in school records.

There seems to be continuing debate regarding the degree of significance preschool plays in the academic achievement of students and its' lasting effect in grades beyond kindergarten.

Although there is available research on what effect preschool education has on the academic achievement of at risk kindergarten students, further research is being conducted to justify the theory that preschool should begin at birth.

Grave (1988) examined readiness as a socially constructed set of ideas or meanings used to shape the first formal school experiences of children and their families. In examining the kindergarten experience in there communities, ideas about readiness were a distinguishing characteristic of the local communities. These ideas emerged from community values and expectations and they were related to individual children in terms of attributes like their age, sex and preschool experience.

Tiedemann and Faber (1992) did a longitudinal study of the link between home variables (mainly maternal support), cognitive prerequisites of preschoolers, and enter school achievement (spelling, reading, and mathematics). Maternal support significantly affected competencies and academic achievement. Cognitive competencies predicted later academic achievement; achievement in first and second grades predicted third grade achievement.

Campbell (1991) studied the relation of children-rearing beliefs and values of parents of children entering kindergarten to children's academic achievements. He examined effects of a child-centered educational preschool program for socioeconomically disadvantaged children on parents' beliefs and values. Findings were that parents of children at risk differed from other parents in beliefs and values.

Marcon (1993) examined the academic achievement of an original sample of 168 inner-city children who were making the transition from the primary to the upper elementary grades (62% of the children made up the recovered sample). Subjects, 95 percent of who were African American, were enrolled in public schools in Washington, D.C. Data from previously conducted interviews with the children's prekindergarten kindergarten, and first grade teachers provided information on the involvement of the children's parents in the children's education. At each grade level, children were grouped into two groups based on whether their parents were involved or noninvolved with the school. Measures of school competence included grade retention and

special education placement. Measures of student achievement included grades, scores on standardized achievement tests, attainment of reading and math objectives. Results indicated that children whose parents were involved to be retained prior to their fifth year in school. Children whose parent's had been involved with the school during their children's second year in school had higher grades and higher achievement test scores at the end of their fifth year in school than did children whose parents were uninvolved.

Hale (1993) conducted a longitudinal evaluation for the third year of the Visions for Children preschool program. An early childhood education demonstration program, the Visions program aims to facilitate the intellectual development and academic achievement of African American preschool children while strengthening their self-esteem and identify as Afro-Americans. Children in the control group attended a high quality day care center with a highly trained staff. Evaluation data indicated that program participants scored higher than control group children on eight tests. In addition, program participants in the two cohorts of the Visions group scored higher than control subjects on subtests of the Metropolitan Reading Readiness Test, taken before kindergarten entry, and the Stanford Achievement Test (SAT), taken before entrance into the first grade. Visions program participants scored significantly higher on the visual recognition and vocabulary subtests of the SAT.

Ramey (1993) reports that his study examined the efficacy of two educational practices designed to prevent learning difficulties in children from high risk families (N-64) during the first 8 years of life. The preventive treatments included: (1) educational daycare plus family education from birth to age 5 followed by a home/school resource program from kindergarten through second grade; or (2) identical family education but no educational daycare followed by the identical home/school program through second grade. Among findings are the following: the most intensely treated group consistently scored higher than the other two groups; over time the IQ and reading scores of all three groups decreased somewhat; there was a significant linear effect of time but no treatment and time interaction effects; an expected rise in academic achievement by the treatment groups from kindergarten to grade 2 was not realized; but significantly fewer of the children in the educational daycare group were retained in grade.

The Chicago Sun-Times (1994) conducted a random sample of the city's kindergarten teachers, 2/3 of low-income children with preschool were prepared for kindergarten last year (66%), while less than half of low-income children without preschool were prepared (47%).

Bowlin (1991) conducted a study for the purpose of investigating

the effect of a preschool program on the achievement of first through fourth grade students in reading and math. The subjects of this study were 208 elementary students from the Estill County (Kentucky ) School District. All the students were white, from middle socioeconomic classes. The experimental group included all students who ha attended preschool. The control group was selected randomly from all the students in first, second, third, and fourth grades who did not have preschool experience. Some research has shown that children who attend preschool outperform children who do not attend preschool on standardized tests in later grades. Other evidence suggests that preschool experience may result in reduced placement in compensatory education, less retention in grade, and improved life chances, especially for disadvantaged children. However, formal academic programs in preschool may fail to have desired social results and produce significant differences in academic gains. In the present study, it was hypothesized that students who had attended preschool would score significantly higher in reading and math on the Comprehensive Test of Basic Skills (CTBS) than children with similar ability who had not attended preschool. Findings did not support the hypothesis: students who had attended preschool did not score significantly higher on the CTBS in reading and math.

Gullo (1992) examined the effect of several variables on children's academic readiness at the end of kindergarten. Results indicated that age of entry into school and number of years in preschool predicted academic readiness. Children who entered preschool by age four scored higher on readiness. Children who entered preschool by age four scored higher on readiness measures than those who entered at age five.

The Chicago Sun-Times (1988) reports that there is a flaw in the preschool programs such as Head Start. Children in Head Start have significant immediate gains in ability as measured by IQ and achievement test scores. However, two years after completing the program they enter school and lose their initial advantage over those who were non-participants. This was referred to as the two-year fade. The survey suggested that a possible reason for the fade was that Head Start and other early-intervention programs for 3- and 4-year olds do not start early enough.

Reynolds (1990) investigated factors that play a role in the fading effects prekindergarten programs for economically disadvantaged children. The school adjustment of 1,284 low-income, minority children in prekindergarten and kindergarten programs funded by the government (i. e. Child Parent Center; Head Start) ways traced through the third year of school. Data were collected on prekindergarten experience entering kindergarten cognitive readiness, parental involvement in school activities, assignment to special education, school mobility, grade retention, children's perceptions of academic integration, and cognitive achievement in reading and mathematics. Results of

a structural model revealed a network of influences between prekindergarten experience and third-year achievement. The five factors with significant direct effects on third-year achievement, ranked in order of magnitude, were academic integration, entering kindergarten cognitive readiness, retention, parent involvement in school, and school mobility. As expected, retention and mobility had negative effects on achievement. Entering kindergarten cognitive readiness and parent involvement were relatively strong mediators of the effect of prekindergarten on third-year achievement. The mediators of prekindergarten are discussed in regard to enhancing and restricting effects. Further, PreK increases but does not fully compensate for entering kindergartners role as a primary early influence on school success. This result, however, is to be expected. PreK is a single, short-term intervention in the lives of children; cognitive readiness is an enduring attribute of individuals. He also stated that the fading effects of PreK on later achievement should not be taken to suggest that PreK is not important after its immediate effect wares off. On the contrary, and as present results indicate, PreK has substantial indirect effects on the early schooling process. Moreover, since entering kindergarten readiness is a pervasive influence in early schooling, the contribution of PreK is all the more important. PreK's total contribution to achievement behavior (ENTER - ACHIEV-3) is equivalent to four to five months of one-half a standard deviation. Thus, the effects of PreK may not fade as much as they are incorporated into intervening variables.

The Carnegie Corporation of New York Task Force Report (1994), has produced scientific evidence in support of early intervention beginning earlier. The task force focused its attention on the earliest years of life: from the prenatal period to age 3. They observed these findings through neurobiological research:

1. Brain development that takes place before age 1 is more rapid and extensive than previously realized. (Brain cell formation is complete but brain maturation is not complete.)

2. Brain development is much more vulnerable to environmental influence than suspected.

3. New scientific evidence for the negative impact of early stress on brain function.

The quality of parent and family interaction might make a difference. Sensitive, nurturant parenting, provide infants with a sense of basic trust, allowing them to feel confident to explore the world, form positive relationships, to resolve disputes, to imply words as tools of learning, and to be self-confident.

According to the review of literature, children attending preschool exhibit greater success in kindergarten and grades beyond. However, at approximately Grade 3 the academic advantages of preschool attendance appear to disappear. The findings are that intervention must begin at birth. Parental involvement in school appears to transmit an advantage to educational achievement of children. The effect of PreK is greater do to the parent participation. In addition to parental participation, students who have high self-esteem achieve higher than those who have low self-esteem.

Therefore, the purpose of the study is to determine the effect of preschool education on academic achievement of at risk kindergarten children.

## Procedures

### Population/Sample:

The population for this study will include 102 kindergarten students. The students attend a Chicago public school, located in a predominantly low and low-middle socioeconomic neighborhood on the southwest-side of Chicago. The population is comprised of 100% minority students.

From the 102 kindergarten students, the school records showed that 30 of the students attended preschool while 72 students did not attend preschool. Thirty students were randomly selected from each of these sub-populations.

Each September the Tests of Basic Experiences (TOBE) is administered to each kindergarten student for purposes of grouping the students according to readiness skills level achieved on the test. Two sample groups of kindergarten students were identified from the school records consisting of preschool attenders and non-preschool attenders. A posttest only control group design was used.

### Treatment of Data:

The findings will be tabulated in terms of means and standard deviations. The t test will be employed at the .05 level of confidence to determine if there is any statistically significant difference between the mean scores.

## Findings of the Study

The samples for the study included kindergarten students of the A. Philip Randolph Academy. At the beginning of the 94-95 school year, in order to determine the grouping of students according to their readiness ability, students were given the Tests of Basic Experiences (TOBE). From these kindergarten students, two sample groups were identified from the school records consisting of preschool attenders and non-preschool attenders. Results from the 1994 and 1995 TOBE was used as a pretest. The "t" test ($p<.05$) for independent samples was done on these two sets o scores to determine if there was a statistically significant difference in achievement of students that did not attend preschool, and those who did attend preschool. Table 1. summarizes the statistical analyses.

TABLE 1

Means, Standard Deviations, and t Tests for the Experimental (Preschool Attendance) Group and the Control (Non-Preschool Attendance) Group for academic achievement scores.

| | Preschoolers (N-30) | Non-Preschoolers (N-30) | |
|---|---|---|---|
| Test | Preschool Experimental | No Preschool Controlled | t |
| M | 14.87 | 11.8 | 2.84* |
| SD | 4.1 | 4.23 | |
| df = 58 | table t (.05) = 2.000<br>2.84 > 2.000 | | |

*Significant @ .05 level

Examination of the 1994 mean posttest achievement scores are 14.87 and 11.8 respectfully. Thus, there is a statistically significant difference between the E-group or C-group, in favor of the former group.

The t scores for the 1994 results (2.84) show a significantly higher academic achievement score for the groups as compared to the C-group.

Overall the data lead to the rejection of the null hypothesis: Students who attend preschool will not have significantly higher academic achievement than those who do not attend preschool.

The results of the study are not surprising in light of the reviewed literature findings. Results are consistent with the

opinions and findings of Hale (1993), Gullo (1992), the Carnegie Corporation of New York Task Force Report (1994) concerning students who attended preschool would achieve higher than those who do not attend preschool. The results might have been different if the researcher had more control over the sample populations, method of data collection, and a larger population.

Further and more in depth research is needed in the area of the effect of preschool education on academic achievement of at risk kindergarten students. Research should continue to search for more effective preschool programs which could bring about a significant difference in the learning and development of all school children. Due to government interest in preschool programs there is an even greater need for further investigation of effective preschool programs.

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